FURNISH WITH MFR'S STANDARD POWER MONITORS.

SERVICE/DISTRIBUTION PANEL — 208Y/120 VOLTS, 3 PHASE, 4 WIRE, NEUTRAL BUS, GROUND BUS, SURFACE MOUNTING, 225 A. MAIN BUS ONLY, COPPER, BOLT-ON BRANCH BREAKERS, FULL SIZE BREAKERS ONLY, 30,000 AIC, NP DIRECTORY, UL LISTED SERVICE DISCONNECT

WIRE SIZE	SERVICE	CIR. BKR. AMP	CIR. BKR. POLE	CIR. NO.	PHASE	CIR. NO.	CIR. BKR. POLE	CIR. BKR. AMP	SERVICE	WIRE SIZE
3/0	P-V SYSTEM	200	3	1	A	2	3	200	LDCTR C	3/0
3/0			–	3	B	4	–			3/0
3/0			–	5	C	6	–			3/0
4/0	PNLBD A	225	3	7	A	8	3	225	PNLBD B	4/0
4/0			–	9	B	10	–			4/0
4/0			–	11	C	12	–			4/0
(TBD)	WTG'S	600	3	13	A	14	3	225	PFFB	
(TBD)			–	15	B	16	–	AF.		
(TBD)			–	17	C	18	–			

PNLBD A — 208Y/120 VOLTS, 3 PHASE, 4 WIRE, NEUTRAL BUS, GROUND BUS, SURFACE MOUNTING, 225 A. MAIN BUS ONLY, COPPER, BOLT-ON BRANCH BREAKERS, FULL SIZE BREAKERS ONLY, 10,000 AIC, TYPEWRITTEN DIRECTORY

WIRE SIZE	SERVICE	CIR. BKR. AMP	CIR. BKR. POLE	CIR. NO.	PHASE	CIR. NO.	CIR. BKR. POLE	CIR. BKR. AMP	SERVICE	WIRE SIZE
#8	ACCU1	50	3	1	A	2	2	20	EF7	#12
#8			–	3	B	4	–			#12
#8			–	5	C	6	1	20	CONTROLS (BVE)	#12
#10	AHU1	20	3	7	A	8	1	20	EF3 (BVE)	#12
#10			–	9	B	10	1	20	EF4 (BVE)	#12
#10			–	11	C	12	1	20	EF5 (BVE)	#12
#8	ACCU2	50	3	13	A	14	1	20	EF6 (BVE)	#12
#8			–	15	B	16	1	20	MOTORIZED OPERATORS (BVE)	#12
#8			–	17	C	18	1	20	MOTORIZED OPERATORS (BVE)	#12
#10	AHU2	20	3	19	A	20	1	20	MOTORIZED OPERATORS (BVE)	#12
#10			–	21	B	22	1	20	MOTORIZED OPERATORS (BVE)	#12
#10			–	23	C	24	1	20	MOTORIZED OPERATORS (BVE)	#12
#10	FCU1	20	1	25	A	26	1	20	MOTORIZED OPERATORS (BVE)	#12
#12	PUMP CP-1	20	2	27	B	28	1	20	MOTORIZED OPERATORS (BVE)	#12
#12			–	29	C	30	1	20	MOTORIZED OPERATORS (BVE)	#12
#12	UV-1	20	1	31	A	32	1	20	MOTORIZED OPERATORS (BVE)	#12
#12	PUMP CP-2	20	1	33	B	34	1	20	MOTORIZED OPERATORS (BVE)	#12
#12	PUMP CP-3	20	1	35	C	36	1	20	MOTORIZED OPERATORS (BVE)	#12
	PFFB			37	A	38	1	20	MOTORIZED OPERATORS (BVE)	#12
	PFFB			39	B	40	1	20	(BVE)	#12
	PFFB			41	C	42	1	20	(BVE)	#12

PNLBD B (SECTION 1) — 208Y/120 VOLTS, 3 PHASE, 4 WIRE, NEUTRAL BUS, GROUND BUS, SURFACE MOUNTING, 225 A. MAIN BUS ONLY, COPPER, BOLT-ON BRANCH BREAKERS, FULL SIZE BREAKERS ONLY, 10,000 AIC, TYPEWRITTEN DIRECTORY

WIRE SIZE	SERVICE	CIR. BKR. AMP	CIR. BKR. POLE	CIR. NO.	PHASE	CIR. NO.	CIR. BKR. POLE	CIR. BKR. AMP	SERVICE	WIRE SIZE
#12	FACP	20	1	1	A	2	2	30	WH	#10
#12	COMM BKBD	20	1	3	B	4	–			#10
#12	COMM BKBD	20	1	5	C	6	1	20	WH	#12
#12	COMM BKBD	20	1	7	A	8	1	20	R-MON LAB 102	#12
#12	MONITOR BKBD	20	1	9	B	10	1	20	R-MON LAB 102	#12
#12	MONITOR BKBD	20	1	11	C	12	1	20	R-MON LAB 102	#12
#12	R-STOR 003	20	1	13	A	14	1	20	R-MON LAB 102 SR	#12
#12	R-STOR 003	20	1	15	B	16	1	20	R-MON LAB 102 SR	#12
#12	R-STOR 003	20	1	17	C	18	1	20	R-MON LAB 102 SR	#12
#12	R-EXT	20	1	19	A	20	1	20	R-MON LAB 102 SR	#12
#12	R-EXT	20	1	21	B	22	1	20	R-MON LAB 102 SR	#12
	SPARE	20	1	23	C	24	1	20	R-MON LAB 102 SR	#12
	SPARE	20	1	25	A	26	1	20	R-PROJ RM 107	#12
	SPARE	20	1	27	B	28	1	20	R-PROJ RM 107	#12
	SPARE	20	1	29	C	30	1	20	R-PROJ RM 108	#12
	PFFB			31	A	32	1	20	R-PROJ RM 108	#12
	PFFB			33	B	34	1	20	R-PROJ RM 109	#12
	PFFB			35	C	36	1	20	R-PROJ RM 109	#12
	PFFB			37	A	38	1	20	R-CONF 110	#12
	PFFB			39	B	40	1	20	R-CONF 110	#12
	PFFB			41	C	42	1	20	R-CONF 110	#12

PNLBD B (SECTION 2)

WIRE SIZE	SERVICE	CIR. BKR. AMP	CIR. BKR. POLE	CIR. NO.	PHASE	CIR. NO.	CIR. BKR. POLE	CIR. BKR. AMP	SERVICE	WIRE SIZE
#12	R-WS 113	20	1	43	A	44	1	20	R-LAB 116	#12
#12	R-WS 113	20	1	45	B	46	1	20	R-LAB 116	#12
#12	R-WS113	20	1	47	C	48	1	20	R-LAB 116	#12
#12	R-WS 113 CTR	20	1	49	A	50	1	20	R-LAB 116 CTR	#12
#12	R-WS 113 CTR	20	1	51	B	52	1	20	R-LAB 116 CTR	#12
#12	R-WS 113 U/C	20	1	53	C	54	1	20	R-LAB 116 U/C	#12
#12	R-WS 113 SR	20	1	55	A	56	1	20	R-LAB 116 SR	#12
#12	R-WS 113 SR	20	1	57	B	58	1	20	R-LAB 116 SR	#12
#12	R-WS 113 SR	20	1	59	C	60	1	20	R-LAB 116 SR	#12
#12	R-WS 113 SR	20	1	61	A	62	1	20	R-LAB 116 SR	#12
#12	R-WS 113 SR	20	1	63	B	64	1	20	R-LAB 116 SR	#12
#12	R-WS 113 SR	20	1	65	C	66	1	20	R-LAB 116 SR	#12
#12	R-WS 113 SR	20	1	67	A	68	1	20	R-JC/MECH	#12
#12	R-WS 113 SR	20	1	69	B	70	1	20	R-HALL 111	#12
#12	R-WS 113 SR	20	1	71	C	72	1	20	R-LANAI 101/EXT	#12
#12	R-WS 113 SR	20	1	73	A	74	1	20	R-COURT 112	#12
#12	R-WS 113 SR	20	1	75	B	76	1	20	R-LANAI 117/EXT	#12
#12	R-WS 113 SR	20	1	77	C	78	1	20	R-LANAI 117/EAST 114	#12
#12	R-WS 113 CEILING DUPLEX	20	1	79	A	80			PFFB	
#12	R-ROOF EAVE	20	1	81	B	82			PFFB	
#12	R-ROOF EAVE	20	1	83	C	84			PFFB	

LDCTR C — 208Y/120 VOLTS, 3 PHASE, 4 WIRE, NEUTRAL BUS, GROUND BUS, SURFACE MOUNTING, 200 A. MINIMUM MAIN BUS ONLY, COPPER, PLUG-IN BRANCH BREAKERS, FULL SIZE BREAKERS ONLY, 10,000 AIC, TYPEWRITTEN DIRECTORY

WIRE SIZE	SERVICE	CIR. BKR. AMP	CIR. BKR. POLE	CIR. NO.	PHASE	CIR. NO.	CIR. BKR. POLE	CIR. BKR. AMP	SERVICE	WIRE SIZE
#12	L-EXIT/EM BASEMENT	20	1	1	A	2	1	20	L-MAKAI HALL 115/SB-A/a	#12
#12	L-NL BASEMENT	20	1	3	B	4	1	20	L-WS 113/SB-A/b	#12
#12	L-ELEC 001	20	1	5	C	6	1	20	L-WS 113/SB-A/c	#12
#12	L-STOR 003	20	1	7	A	8	1	20	L-WS 113/SB-A/d	#12
	PFFB			9	B	10	1	20	L-WS 113/SB-A/e	#12
	PFFB			11	C	12	1	20	L-SB-A/(sp)	#12
	PFFB			13	A	14	1	20	SPARE	
#12	L-EXIT/EM-ML MAUKA	20	1	15	B	16	1	20	SPARE	
#12	L-EXIT/EM-ML MAKAI	20	1	17	C	18	1	20	L-LAB 116	#12
#12	L-NL-ML WEST AREA	20	1	19	A	20	1	20	L-LAB 116	#12
#12	L-NL-ML EMT AREA	20	1	21	B	22	1	20	L-LAB 116(SPARE)	#12
#12	L-MON LAB 102	20	1	23	C	24	1	20	L-LAB 116(SPARE)	#12
#12	L-RMS 107/108/109	20	1	25	A	26			PFFB	
#12	L-CONF 110	20	1	27	B	28			PFFB	
#12	L-MAUKA HALL 111	20	1	29	C	30			PFFB	
#12	L/EF WOMEN	20	1	31	A	32			PFFB	
#12	L/EF MEN	20	1	33	B	34			PFFB	
	PFFB			35	C	36			PFFB	
	PFFB			37	A	38			PFFB	
	PFFB			39	B	40			PFFB	
	PFFB			41	C	42			PFFB	

CALCULATIONS FOR ORDINANCE NO. 94-123

INTERIOR (SYSTEM PERFORMANCE CRITERIA)

AREA/ACTIVITY	AREA SQ.FT.	AREA FACTOR	UNIT POWER DENSITY, W/SQ.FT.	EXTERIOR LIGHTING POWER ALLOWANCE, WATTS	CONTROL POINTS REQUIRED	CONTROL POINTS ACTUAL	ASSISTED INTERIOR LIGHTING POWER ALLOWANCE	CONNECTED LIGHTING POWER, WATTS
BASEMENT								
ELECTRIC 001	231	1.4	1.5	486	1	1	486	336
STORAGE 003	721	1.2	1.0	866	2	2	866	960
MAIN LEVEL								
MONITORING LAB 102	350	1.3	1.4	637	1	1	637	336
WOMEN 103	140	1.6	0.5	112	1	1	112	130
MEN 106	140	1.6	0.5	112	1	1	112	130
MECH 104	20	1.8	1.5	54	1	1	54	26
JC 105	20	1.8	1.0	36	1	1	36	26
PROJECT RM 107	165	1.5	1.4	347	1	2	347	140
PROJECT RM 108	165	1.5	1.4	347	1	2	347	140
DIRECTOR 109	165	1.5	1.4	347	1	2	347	140
CONFERENCE RM 110	360	1.3	1.4	6552	1	2	6552	440
MAUKA HALL 111	400	1.3	1.0	520	1	3	520	258
WORK STATIONS 113	1160	1.1	1.4	1787	3	3	1787	672
MAKAI HALL 115	120	1.7	1.0	204	1	3	204	64
LAB 116	971	1.1	2.2	2350	3	3	2350	672
TOTALS							14757	4470

EXTERIOR

AREA/ACTIVITY		EXTERIOR LIGHTING UNIT POWER ALLOWANCE	EXTERIOR LIGHTING POWER ALLOWANCE, WATTS	CONNECTED LIGHTING POWER, WATTS
BASEMENT				
WALKWAY	674 SF.	4W./SF.	2696	78
MAIN LEVEL				
COVERED LANAI 101	486 SF.	4W./SF.	1944	167
LANAI 117/WALKWAYS	1668 SF.	4W./SF.	6672	351
TOTALS			11312	596

LIGHTING FIXTURE SCHEDULE

SYMBOL/TYPE	MOUNTING	LAMP	DESCRIPTION
K①	WALL SURFACE ABOVE DOOR	EXIT: LED EMERG: 2–8W. OR 12W. HALOGEN	COMBINATION EXIT/EMERGENCY LIGHTING, COMMERCIAL APPLICATION, HIGH IMPACT POLYCARBONATE HOUSING, WHITE OR TAN, MAINTENANCE FREE LEAD CALCIUM BATTERY, 1½–HOUR OPERATING CAPACITY, SELF–DIAGNOSTIC SYSTEM FOR TESTING AND CHARGING, FULL RANGE ADJUSTMENT OF LAMP HEADS. (FINAL SELECTION BY ARCHITECT. PROVIDE $350.00 ALLOWANCE EACH.)
K②	WALL SURFACE EL+___	2–8W. HALOGEN	SELF–CONTAINED EMERGENCY LIGHTING, COMMERCIAL APPLICATION, HIGH–IMPACT POLYCARBONATE HOUSING, WHITE OR TAN, 6–VOLT MAINTENANCE FREE LEAD CALCIUM BATTERY, 1–1/2 HOUR OPERATION CAPACITY, SELF–DIAGNOSTIC SYSTEM FOR TESTING AND CHARGING, FULL–RANGE ADJUSTMENT OF LAMP HEADS, CONNECTION BY CORD/PLUG.
③	CEILING SURFACE	1–13W. COMPACT FLUORESCENT SELF–BALLASTED	OUTDOOR ARCHITECTURAL DOWNLIGHT, CYLINDER, APPROXIMATELY 5" DIAMETER X 9" LONG, HEAVY GAUGE ALUMINUM HOUSING, DARK BRONZE POLYESTER POWDER FINISH, OPEN BOTTOM CLOSED TOP, UL LISTED FOR DAMP LOCATION. LAMP SHALL BE COMPLETELY CONTAINED WITHIN HOUSING. (FINAL SELECTION BY ARCHITECT. PROVIDE $90.00 ALLOWANCE EACH.)
④	CEILING SURFACE	2–F32/T8 4100K	4 FEET, FLUORESCENT LAMPHOLDER, BARE LAMP, WHITE METAL FRAME, ENCLOSED BALLAST HOUSING, CHANNEL TYPE, SNAP–ON END PLATES, ELECTRONIC SOLID STATE ENERGY EFFICIENT BALLAST SUITABLE FOR USE WITH LAMP TUBE GUARDS.
⑤	CEILING SURFACE	MFR'S STANDARD	EXTERIOR EMERGENCY LIGHTING. (FINAL SELECTION BY ARCHITECT. PROVIDE $600.00 ALLOWANCE EACH.)
K⑥	WALL SURFACE EL.+80" BOF	1–13W. COMPACT FLUORESCENT SELF–BALLASTED	OUTDOOR ARCHITECTURAL WALL BRACKET DOWNLIGHT, CYLINDER APPROXIMATELY 5" DIAMETER X 9" LONG, 4" EXTENSION, HEAVY GAUGE ALUMINUM HOUSING, DARK BRONZE POLYESTER POWDER FINISH, OPEN BOTTOM, CLOSED TOP. LAMP SHALL BE COMPLETELY CONTAINED WITHIN HOUSING. (FINAL SELECTION BY ARCHITECT. PROVIDE $120.00 ALLOWANCE EACH.)
K⑦	WALL RECESSED EL. TBD	1–13W. COMPACT FLUORESCENT SELF–BALLASTED	FLUSH "STEP" LIGHTING. (FINAL SELECTION BY ARCHITECT. PROVIDE $250.00 ALLOWANCE EACH.)
K⑧	WALL SURFACE (ON BEAM OR SIMILAR)	1–32W. HEX TUBE COMPACT FLUORESCENT (DIMMABLE)	ELLIPTIPAR 152 SERIES, DIMMING BALLAST. (FINAL SELECTION BY ARCHITECT. PROVIDE $250.00 ALLOWANCE EACH.)
K⑨	WALL SURFACE (ON BEAM OR SIMILAR)	2–42W. HEX TUBE COMPACT FLUORESCENT (DIMMABLE)	ELLIPTIPAR 152 SERIES, DIMMING BALLAST. (FINAL SELECTION BY ARCHITECT. PROVIDE $300.00 ALLOWANCE EACH.)
K⑩	WALL SURFACE (ON BEAM OR SIMILAR)	1–42W. HEX TUBE COMPACT FLUORESCENT (DIMMABLE)	BEGA 2336P SERIES, DIMMING BALLAST. (FINAL SELECTION BY ARCHITECT. PROVIDE $275.00 ALLOWANCE EACH.)
⑪	CEILING RECESSED	1–18W. COMPACT FLUORESCENT SELF–BALLASTED (DIMMABLE)	RECESSED UNIVERSAL ROUND HOUSING, SPUN ALUMINUM REFLECTOR, ADJUSTABLE SOCKET HOLDER PLATE, LARGE JUNCTION BOX U.L. LISTED FOR THRU–WAY WIRING, ACCESS TO JUNCTION BOX FROM MOUNTING HOLE, ADJUSTABLE BAR HANGER, BLACKED STEPPED BAFFLE TRIM, ROUND, RIMLESS TRIM, APPROXIMATELY 6 INCH DIAMETER. LAMP SHALL BE COMPLETELY CONTAINED WITHIN HOUSING, DIMMING BALLAST. (FINAL SELECTION BY ARCHITECT. PROVIDE $110.00 ALLOWANCE EACH.)
⑫	CEILING RECESSED	1–26W. COMPACT FLUORESCENT SELF–BALLASTED (DIMMABLE)	RECESSED UNIVERSAL ROUND HOUSING, SPUN ALUMINUM REFLECTOR, ADJUSTABLE SOCKET HOLDER PLATE, LARGE JUNCTION BOX U.L. LISTED FOR THRU–WAY WIRING, ACCESS TO JUNCTION BOX FROM MOUNTING HOLE, ADJUSTABLE BAR HANGER, BLACKED STEPPED BAFFLE TRIM, ROUND, RIMLESS TRIM, APPROXIMATELY 6 INCH DIAMETER. LAMP SHALL BE COMPLETELY CONTAINED WITHIN HOUSING, DIMMING BALLAST. (FINAL SELECTION BY ARCHITECT. PROVIDE $110.00 ALLOWANCE EACH.)
⑬	WALL SURFACE EL.+___ BOF (CANTILEVER)	2–F28T5 4100K (DIMMABLE)	ELLIPTIPAR 106 SERIES, 96 INCH LONG, DIMMING BALLAST. (FINAL SELECTION BY ARCHITECT. PROVIDE $500.00 ALLOWANCE EACH.)
⑭	CEILING SURFACE	1–26W. COMPACT FLUORESCENT SELF–BALLASTED	INDOOR ARCHITECTURAL DOWNLIGHT, CYLINDER, APPROXIMATELY 5" DIAMETER X 9" LONG, HEAVY GAUGE ALUMINUM HOUSING, DARK BRONZE POLYESTER POWDER FINISH, OPEN BOTTOM CLOSED TOP. LAMP SHALL BE COMPLETELY CONTAINED WITHIN HOUSING. (FINAL SELECTION BY ARCHITECT. PROVIDE $90.00 ALLOWANCE EACH.)
⑮	CEILING RECESSED	1–26W. COMPACT FLUORESCENT SELF–BALLASTED	RECESSED UNIVERSAL ROUND HOUSING, SPUN ALUMINUM REFLECTOR, ADJUSTABLE SOCKET HOLDER PLATE, LARGE JUNCTION BOX U.L. LISTED FOR THRU–WAY WIRING, ACCESS TO JUNCTION BOX FROM MOUNTING HOLE, ADJUSTABLE BAR HANGER, BLACKED STEPPED BAFFLE TRIM, ROUND, RIMLESS TRIM, APPROXIMATELY 6 INCH DIAMETER. LAMP SHALL BE COMPLETELY CONTAINED WITHIN HOUSING. (FINAL SELECTION BY ARCHITECT. PROVIDE $110.00 ALLOWANCE EACH.)

ENERGY LAB
Hawai'i Preparatory Academy

Kamuela, Hawaii
Tmk: 6-5-01: 33

FLANSBURGH ARCHITECTS

77 North Washington Street
Boston, Massachusetts 02114
617.367.3970 tel
617.720.7873 fax
www.flansarchitects.com

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Kealakekua, HI 9675
808.323.2304 tel/fax

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100 Broadway, 23rd Floor
New York, NY. 10005
212 334 2025 tel

CIVIL ENGINEERING
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819
808.521.5361 tel
808.538.7819 fax

STRUCTURAL ENGINEERING
Walter Vorfeld & Associates
10 Ulana Street
Makawao, Maui, HI 96768
808.572.3535 tel
808.573.3616 fax

MECHANICAL ENGINEERING
Hakalau Enginnering
PO Box 252
Hakalau, Hawaii 96710
808.961.6206 tel

ELECTRICAL ENGINEERING
Wallace T. Oki, PE, Inc.
808.961.9666 x22

ALL ELECTRICAL WORK SHALL COMPLY TO CHAP. 9, HAWAII COUNTY CODE, AND INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE

WALLACE T. OKI
LICENSED PROFESSIONAL ENGINEER
3539–E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

WALLACE T. OKI, P.E., INC.
ELECTRICAL ENGINEERING
P.O. BOX 4070/688 KINOOLE ST., STE. 115B
HILO, HI. 96720 PH:961-9666/FAX:935-2549

WTO REF. NO. 82008149

ELECTRICAL WORK

Drawn by: -	Job Number: 2804.00
Checked by:	Scale: AS NOTED
Plot Date:	Issue Date: 17 OCT 08
PERMIT ISSUE	E-15